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ARIZONA STATE UNIVERSITY ■ COLLEGE OF BUSINESS
CENTER FOR BUSINESS RESEARCH

Second Quarter Net Migration is Weakest of the 1980s

Net in-migration to the Phoenix metropolitan area—and all of Arizona—was nearly non-existent during second quarter 1988. At 1,000 persons, the net inflow to the Phoenix area was the lowest of the 1980s, even lower than the worst of the 1981-82 recession (see Figure I).

The extremely low net in-migration figure is directly tied to economic conditions, particularly job creation. During the second quarter, wage and salary employment fell by approximately 3,000 in the Phoenix area.

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Layoffs have occurred particularly in the construction industry statewide and in the manufacturing industry in the Tucson area. These workers have little hope of finding employment in Arizona for at least several months. It appears they are leaving the state to find work elsewhere.

Typically, when economic conditions are poor in Arizona, the entire nation is in a recession, thus jobs are not readily available elsewhere and the unemployed do not leave. During 1988, however, other areas are doing well economically, including neighboring California. Thus, net in-migration figures are below even recessionary levels because not only are fewer people moving to the state due to the unavailability of jobs, but out-migration, which usually is stable, is up.

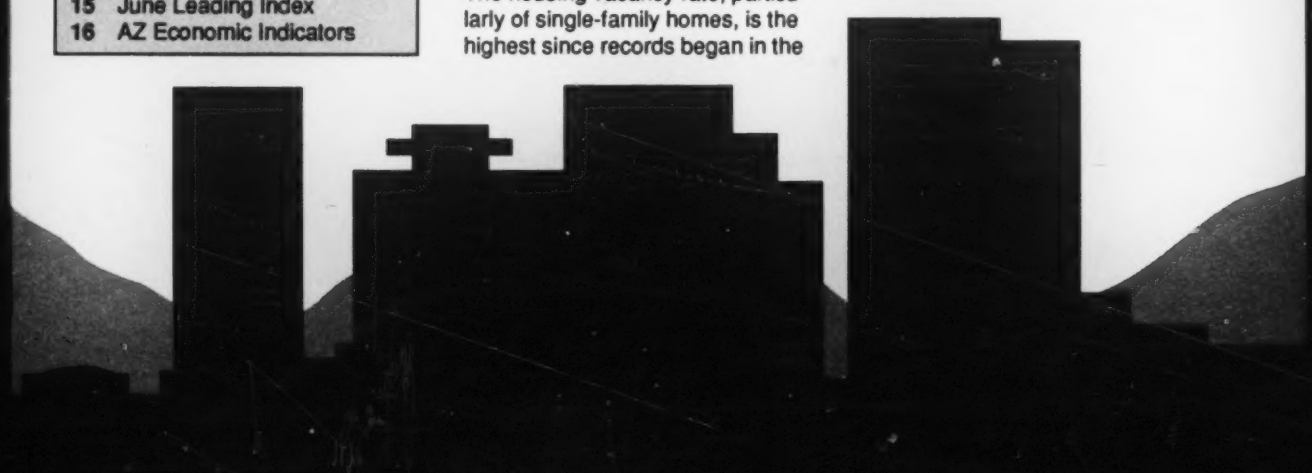
This theory of increased out-migration fits other data as well. Despite the loss of jobs, the unemployment rate has not risen much, implying that people have left the state. The housing vacancy rate, particularly of single-family homes, is the highest since records began in the late 1960s, indicating that people are leaving the state without selling or renting their homes.

Net in-migration has been well below average for five consecutive quarters. In the last four quarters through second quarter 1988, the figure of 21,000 net in-migrants to the Phoenix area was less than one-half the 1970-87 annual average.

Because of net natural increase (births less deaths), the Phoenix area population rose 6,000 during the second quarter, to 2,013,000. Statewide, the population on July 1 was estimated at 3,476,000, up 10,000 during the second quarter.

EMPLOYMENT

The number of people employed declined across Arizona during second quarter 1988, according to seasonal adjustment of data produced by the Arizona Department of Economic Security. Compared to March, employment in June was about 3,000 less in the Phoenix



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area, 5,000 lower in the Tucson area, and 2,000 fewer in rural Arizona. Both in Maricopa County and statewide, the three-month decrease was similar to the worst of the 1981-82 recession.

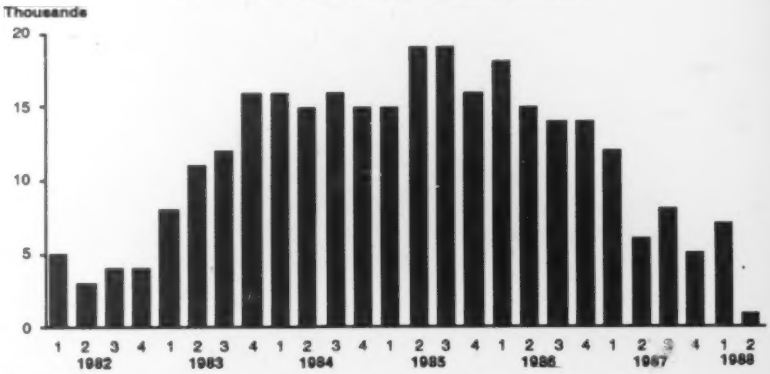
Coupled with no change in March, little advance in February and a strong boost in January, Arizona employment gains during the first six months of 1988 were nil. New job creation in the Phoenix area offset losses elsewhere, especially in the Tucson area.

While declines were worst in the construction industry, losses occurred in several other industries, particularly finance, insurance and real estate, as well as transportation, communications and public utilities. Even services, which usually adds jobs throughout recessions, suffered employment losses in the second quarter.

In the Phoenix area, retail trade and manufacturing were the only industries to experience an increase in employment. In the rest of the state, only government and mining added jobs. The manufacturing sector was especially weak in Pima County, even before the IBM layoffs were announced.

The stage was set for the current conditions in 1986, when construction swung from strong employment gains to layoffs. Manufacturing employment increases had already slowed, though they have continued relatively steady at a modest pace. The slowdown in these two goods-producing industries caused employment gains in other sectors to deteriorate somewhat during 1986, but they then remained relatively constant and strong until early 1988.

FIGURE I
NET IN-MIGRATION TO MARICOPA COUNTY



Source: Center for Business Research, College of Business, Arizona State University

OUTLOOK

Employment should resume rising soon. Many of the layoffs, such as by public utilities, were one-time phenomena. Employment gains, however, are likely to remain subpar for at least several months, and possibly for much longer. As a result, net inflows of population are likely to improve later this year and in early 1989, but should remain well below average levels.

– Tom R. Rex
Research Manager

Arizona Among Leaders in 1980-87 Population Growth

Between 1980 and 1987, Arizona was the third fastest growing state in the nation with a 25 percent increase in population, according to the U.S. Bureau of the Census. The population climbed by 668,000, the fifth greatest numeric gain. Most of this increase (437,000) resulted from migration.

Census data shows a population rise from 2,718,000 on April 1, 1980, to 3,386,000 on July 1, 1987. The Center for Business Research estimate for mid-year 1987 is slightly higher (3,405,000). The difference is in Pima County, where the Census Bureau uses the 1985 special census as a benchmark; the CBR assumes a small undercount in that census.

1980-87 CHANGE

By Region

More than 85 percent of the nation's population growth between 1980 and 1987 occurred in four geographic areas – all in the South or West. Less than one-half of the nation's total population reside in those four areas.

New residents in the Pacific area (California, Oregon, Washington, Alaska, Hawaii) totaled 4,733,000, barely more than in the South Atlantic states (Florida, Georgia, the Carolinas, the Virginias, Maryland, Delaware and the District of Columbia). The West South Central area (Texas, Oklahoma, Louisiana, Arkansas) grew by 3,163,000 persons and the Mountain region, which includes Arizona, New Mexico, Colorado, Nevada, Utah, Wyoming, Idaho and Montana, added 1,794,000 residents.

Regional differences are even greater when measuring net migration. Only the four areas discussed above enjoyed substantial net in-migration; the New England states (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut) experienced a small net inflow. Substantial net out-migration (1,741,000) occurred from the East North Central states (Ohio, Michigan, Illinois, Indiana, Wisconsin) while losses from the Middle Atlantic states (New York, New Jersey, Pennsylvania) and West North Cen-

tral region (Minnesota, Iowa, Missouri, Nebraska, Kansas, the Dakotas) were still large (449,000 and 401,000). Migration to and from the East South Central area (Alabama, Kentucky, Tennessee, Mississippi) was barely negative.

By State

On a percentage basis, 1980-87 growth rates in Alaska and Nevada exceeded that of Arizona. Despite its much larger population, Florida's rate barely trailed that of Arizona. Other states high on the list were California, New Mexico, Utah and New Hampshire.

In terms of numbers of people, California added the most (3,995,000), followed by Texas (2,559,000) and Florida (2,277,000). Thus, 52 percent of the nation's population gain occurred in just three states. Georgia's gain also exceeded Arizona's, followed by Virginia, North Carolina, Washington and Colorado.

Looking only at migration, the picture was even more lopsided, with gains in California, Florida and Texas dwarfing those of the other states. Arizona ranked fourth, barely ahead of Georgia; another big gap separated these states from North Carolina and Virginia. On a percentage basis, Florida's migration growth rate was greatest, followed by Nevada and Arizona.

Growth from net natural increase was much different, with Alaska and Utah far ahead of the others on a percentage basis. Arizona was ninth. Florida's rate was one of the smallest in the country because of its elderly population.

Five "states" lost population between 1980 and 1987: Iowa, Michigan, West Virginia, Ohio and the District of Columbia. Growth was slow in other North Central and Mid-Atlantic states, particularly Pennsylvania and Indiana.

Based on percentages, net out-migration was greatest from Iowa, Wyoming, the District of Columbia, Michigan, West Virginia and Ohio. Numerically, Michigan lost the most people (503,000), followed by Ohio, Illinois, New York, Indiana and Pennsylvania.

ANNUAL CHANGE

By Area

Growth patterns have varied during the 1980s. After experiencing little growth in the early part of the decade, New England had its strongest year in 1987 (mid-year 1986 through mid-year 1987). A similar pattern is found in the East North Central area, which suffered population losses in 1982 and 1983 – net out-migration exceeded net natural increase by approximately 100,000 per year – but enjoyed a gain of 182,000 in 1987, thanks to the industrial recovery.

In contrast, economic conditions in the West North Central region were stronger in the early 1980s than thereafter. Farming problems slowed population gains to 18,000 in 1986, the worst year. Growth in the Mid-Atlantic states has been inconsistent from year to year while population gains in the East South Central area have been slow but steady.

Population in the South and West grew the most in 1981 and 1982, and the least in 1984 and 1987, largely because of vagaries in the oil industry. Gains in the West South Central states varied immensely, from 818,000 at the peak of the oil boom in 1982 to only 46,000 in 1987. The Mountain states experienced a less severe version of the same pattern, due to the impact of the energy industry on the region, especially in Colorado and Wyoming. Increases ranged from 312,000 in 1982 to 185,000 in 1987.

The Pacific region's growth pattern largely was the opposite of the Mountain region's, with the greatest growth in 1986 and 1987. Likewise, the South Atlantic area's growth was affected by that of the West South Central region. The South Atlantic's smallest gains were in 1982 and 1983 and the largest occurred in 1986 and 1987.

By State

Arizona's yearly growth was unlike that of the other Mountain states, except perhaps Nevada. It experienced its slowest growth in the early 1980s, because of the two recessions, and its fastest in 1985 and 1986. In contrast, Montana, Idaho, Wyoming, Colorado and Utah grew the fastest from 1981 through 1983 and the slowest in 1986 and 1987.

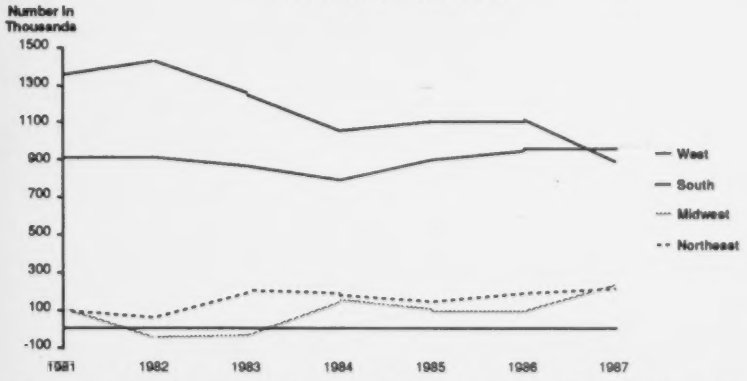
Nearly all of the population gain in the Pacific region occurred in California, whose annual pattern was not much different from that of Arizona, except that California's strongest year was in 1987, when growth had already begun to slow in Arizona.

In the West South Central region, population growth swung widely between the peak in 1982 and the worst year in 1987 (from 610,000 to 100,000 in Texas, 118,000 to -34,000 in Oklahoma and 83,000 to -38,000 in Louisiana).

All states in the East North Central region enjoyed their greatest population growth of the 1980s in 1987; Ohio, Michigan and Indiana lost population between 1981 and 1983. In the West North Central area, Kansas, Nebraska and Iowa each lost residents between 1985 and 1987; Iowa's population decreased between 1981 and 1984 as well.

– **Tom R. Rex**
Research Manager

FIGURE I
POPULATION CHANGE



Source: Calculated by the Center for Business Research, College of Business, Arizona State University, from U.S. Bureau of the Census data.

Second Quarter Homes Sales Rebound

Home sales in Maricopa County rebounded during second quarter 1988 from the lackluster prior quarter. However, the housing market likely will continue to be plagued by troubles from related economic markets.

ECONOMIC CONDITIONS

Over 15,000 single-family homes were vacant during the second quarter, according to the Phoenix Metropolitan Housing Study. Vacancies during both the first two quarters of 1988 were nearly twice as high as the next-highest 8,500 in fourth quarter 1986. Vacancy rates for single-family homes hit a high of 3 percent during the first two quarters, higher than any time since 1972. Apartments reached their all-time high vacancy of 17 percent, and may continue to increase when construction is completed on the 2,541 units permitted during second quarter 1988. Further, a negative 11,925 apartment units were absorbed during the second quarter, double the next highest decline of 5,400 during second quarter 1987.

Seasonally adjusted job growth hit its lowest level since 1982 during second quarter 1988; 3,500 fewer people were employed this quarter than in the first quarter, and the total number employed increased at half the national rate from June 1987 to June 1988.

Population net in-migration was estimated to be only 1,000 during the second quarter. When combined with the vacancy rate increase and declines in absorption and job growth this may imply that historically constant out-migration is on the rise, possibly due to better economic conditions in competing states.

Personal income has also been growing slowly – 1987's per capita income in Arizona was just 91 percent of the national average, and little change is expected in 1988.

SALES AND PRICES

Second quarter home sales totaled 13,700, an increase of 35 percent from first quarter 1988, but still 21 percent lower than second quarter 1987. New single-family homes increased the most from first quarter 1988 (49 percent), followed by resale single-family homes (35 percent). New and resale homes of both types lagged behind the levels of second quarter 1987.

New single-family homes have been generally following a trend of higher prices and lower sales volumes since second quarter 1987 – until second quarter 1988's 4 percent price decline accompanied by a 49 percent increase in sales. The question remains as to how much of the price change was truly a change in the price level of the same home (a price cut) and how much was a movement of buyers toward less expensive homes, possibly with fewer amenities.

Townhouses and condominiums performed worse than single-family homes. Resale townhouses/condos fared the worst compared to the prior quarter; prices fell 2.4 percent, but sales increased only 22 percent. New townhouse sales also rose only 22 percent, but that occurred in spite of a 10 percent price increase. When compared to second quarter 1987, new townhouse sales fell 67 percent, the largest decline of all categories.

FORECAST

Even though second quarter's sales rebounded from the prior two quarters, they were not great by historical standards, and the future looks precarious. The primary concerns center around projections for net in-migration, which are the lowest since 1982, and dismal job growth forecasts. Vacancy and absorption rates are also unsettling, while building permits are slowing significantly only in the townhouse/condo market. The aging of the baby-boom generation will continue to reduce the number of young people typically considered to be first-time homebuyers, and the already overbuilt multifamily market may experience another burst of new product.

– **Sharla Kivett,** *Research Analyst*
Arizona Real Estate Center

TABLE 1
METROPOLITAN PHOENIX HOME SALES

	Single-Family			Townhouse/Condominium			
Median Sales Price	*Resale*	*New*	*Total*	*Resale*	*New*	*Total*	*Grand Total*
First Quarter 1987	$75,000	$92,050	$81,400	$63,000	$70,950	$66,000	$78,500
Second Quarter 1987	77,500	94,650	84,000	64,000	74,650	67,000	80,725
Third Quarter 1987	79,700	100,200	86,000	62,000	75,550	64,900	82,000
Fourth Quarter 1987	77,500	102,400	85,700	63,350	80,625	66,500	82,500
First Quarter 1988	76,500	103,450	84,000	63,000	71,900	64,825	79,900
Second Quarter 1988	77,000	98,900	83,825	61,500	78,950	64,000	80,000
Number of Sales							
First Quarter 1987	6,525	3,975	10,500	1,550	1,050	2,600	13,100
Second Quarter 1987	9,725	4,350	14,075	2,225	1,025	3,250	17,325
Third Quarter 1987	8,925	3,550	12,475	2,225	650	2,875	15,325
Fourth Quarter 1987	6,825	3,575	10,400	1,750	650	2,400	12,800
First Quarter 1988	6,075	2,150	8,225	1,600	275	1,875	10,125
Second Quarter 1988	8,200	3,200	12,000	1,950	325	2,300	13,700

Note: All numbers rounded to nearest 25; subcategories may not add to total due to rounding.

Source: Arizona Real Estate Center, College of Business, Arizona State University; from data supplied by Real Estate Evaluation Group, Chandler, Az.

Housing Affordability Continues to Climb in Second Quarter

Affordability of Phoenix area single-family homes continued to climb during second quarter 1988. New home affordability improved more than resale, but remained considerably below the resale level.

The index for new homes surged to 96 from 91 the prior quarter, due primarily to a reduction in the median price. The median price of new single-family homes fell from first quarter's $103,450 to $98,900 in the second quarter. The index for resale homes remained relatively constant at 124, up from 123 the prior quarter.

An index of 100 or more indicates that a median-income household is able to qualify for a median-priced home, assuming a 15 percent downpayment on a fixed-rate, conventional, 30-year mortgage and an income qualification factor of 28 percent.

The resale home index has surpassed 100 each quarter since the beginning of 1986. New homes topped 100 only in 1987's first quarter, but are approaching the 100 mark once again. During second quarter 1988, a median-income household could afford a $95,200 home – more than the $77,000 median-priced resale home, but slightly less than the $98,900 median-priced new home.

COMPONENT CHANGES

Typically, variations in mortgage interest rates have had greater impact on housing affordability than fluctuations in either home prices or household incomes. However, during the second quarter the drop in new home prices affected affordability levels more than the minute increase in mortgage rates. The effective interest rate rose from 10.7 percent in the first quarter to 10.8 percent in the second quarter.

Household income rose faster than the median home price for both new and resale homes during both the first two quarters of 1988.

NATIONAL AFFORDABILITY

The Phoenix affordability indexes continued to outperform the national indexes. National affordability remained relatively stable during the second quarter; the new home index fell from 86 to 84 while the resale index rose from 106 to 107.

Both median home prices and their rates of increase were considerably different nationally than in the Phoenix area. From first quarter 1987 to second quarter 1988, U.S. resale homes increased from $84,300 to $88,975, over 5 percent. Phoenix area resales increased less than 3 percent.

New home prices increased 15 percent nationally since first quarter 1987, from $97,900 to $112,400. Phoenix area new home prices increased each quarter prior to falling in second quarter 1988. Overall, Phoenix area new homes increased only 7 percent during the five quarters, from $92,050 to $98,900.

OUTLOOK

No dramatic changes in housing affordability are expected during the next few months. New home prices fell during the second quarter, as predicted last quarter, but should not continue to fall significantly. Mortgage rates are uncertain, but any upward change during the balance of 1988 probably will be only slight. Local economic conditions are precarious (see Home Sales, p.4), but with no major changes expected in interest rates, income or home prices, affordability levels should experience only minor adjustments.

– **Sharla Kivett,** *Research Analyst*
Arizona Real Estate Center

The numbers in this article and the home sales article (see page 4) represent a new data series, inconsistent with that used prior to 1988. Both the new data source and the method of computer processing have been changed, primarily to improve the reporting of the number of new home sales. As previously reported, the prior numbers underestimated the number of new homes sold while overestimating resale homes.

In a future article, additional history will be provided from the new data source, as well as seasonally adjusted numbers. The old series will be continued on the back page table until we have the new history. For more information contact the Arizona Real Estate Center, College of Business, Arizona State University, Tempe AZ 85287, (602) 965-5440.

TABLE 1
HOUSING AFFORDABILITY INDEXES
Metropolitan Phoenix; Single-family Only

			Resale Homes			New Homes		
	Median Gross Monthly Income	*Effective Interest Rate*	*Median Sales Price*	*Monthly Housing Payment*	*Affordability Index*	*Median Sales Price*	*Monthly Housing Payment*	*Affordability Index*
1st Qtr. 1987	$2,920	9.4%	$75,000	$630	130	$92,050	$770	106
2nd Qtr. 1987 ...	2,970	10.6	77,500	710	116	94,650	870	95
3rd Qtr. 1987	3,020	10.8	79,700	750	113	100,200	940	90
4th Qtr. 1987	3,080	11.3	77,500	760	114	102,400	1,000	86
1st Qtr. 1988	$3,130	10.7%	$76,500	$710	123	$103,450	$960	91
2nd Qtr. 1988 ...	3,190	10.8	77,000	720	124	98,900	930	98

Source: Arizona Real Estate Center, College of Business, Arizona State University. Interest rates are from the Federal Home Loan Bank Board *News*.

Gross County Product Reveals Urban/Rural Disparities

Arizona Gross County Products (GCP) for 1970 through 1986 reveal two disparities in economic growth: the first between urban and rural counties during the 1980s, and the second in the rural counties between the 1970s and the 1980s. During the 1970s, non-urban economic growth was about equal to that of the Tucson area, not much behind the pace set by the Phoenix area. However, during the 1980s the growth rate in the rural counties was less than one-half that of the 1970s while urban growth continued at about the same pace.

TABLE 1
REAL ANNUAL AVERAGE GROWTH IN GROSS PRODUCT

	1970-86		1970-80		1980-86	
	Total	*Adjusted*	*Total*	*Adjusted*	*Total*	*Adjusted*
Apache	3.4%	3.8%	4.0%	4.6%	2.3%	2.4%
Cochise	1.8	2.5	1.7	2.6	1.8	2.2
Coconino	4.7	4.6	5.6	5.6	3.2	3.1
Gila	2.7	3.1	5.0	5.5	–0.9	–0.6
Graham	1.8	3.1	4.0	4.4	–1.7	1.0
Greenlee	1.9	–2.6	4.5	–0.7	–2.0	–6.7
Maricopa	6.3	6.3	6.3	6.2	6.5	6.5
Mohave	5.9	6.0	6.8	7.0	3.6	4.2
Navajo	6.4	4.9	8.5	6.7	3.0	2.0
Pima	4.9	5.0	5.1	4.7	4.1	5.5
Pinal	3.3	3.7	4.6	2.4	1.1	6.0
Santa Cruz	3.5	3.4	4.0	3.9	2.7	2.7
Yavapai	5.7	5.5	6.9	6.3	3.7	4.2
Yuma/LaPaz	4.4	3.5	5.4	4.0	2.9	2.6
Non-metropolitan	3.9	3.9	5.1	4.6	2.1	2.9
ARIZONA	5.6	5.7	5.8	5.7	5.4	5.8

Note: Adjusted gross product excludes the contributions of the agriculture and mining industries.

Source: Center for Business Research, College of Business, Arizona State University.

CURRENT DOLLAR GCP

In 1986, Maricopa County's gross product of $35.9 billion accounted for more than two-thirds of the state's $52.5 billion gross product. Pima County's $8.5 billion product represented 16 percent of the state total. None of the rural counties' shares reached 2.5 percent; Yuma/LaPaz's GCP was largest at $1.3 billion.

The only sectors for which the Phoenix area did not account for two-thirds or more of the state's gross product were agriculture, mining and government (despite Phoenix being the state capital). Significant shares by other counties included Yuma's 25 percent of the state's agriculture gross product and Pinal's 24 percent of mining.

SECTORAL SHARES

The economies of the state as a whole and of its metropolitan areas are highly diversified, with relatively equal shares of gross product contributed by services, trade, manufacturing, government and FIRE (finance, insurance and real estate). In contrast, most of the non-urban counties are highly dependent on one or a few industries, particularly government and mining. In several counties, the importance of mining and agriculture is declining, but is being replaced by government. Dependence on these three industries is largely responsible for the poor performance of the non-urban economies during the 1980s.

ECONOMIC GROWTH

County economic growth on an inflation-adjusted basis is shown in Table 1. In addition to total GCP growth, figures for adjusted GCP (omitting the highly variable agriculture and mining industries) are presented. In some counties, both measures must be used to garner an understanding of economic conditions.

During the entire 1970-86 period, statewide growth averaged just more than 5.5 percent per year. Navajo County's growth rate was the greatest because of a huge increase in its mining industry output (mostly coal). As seen by the large difference between total and adjusted growth, the mining surge did not spread through the rest of the economy. On an adjusted basis, the Phoenix area's growth was the fastest, barely exceeding that of Mohave County.

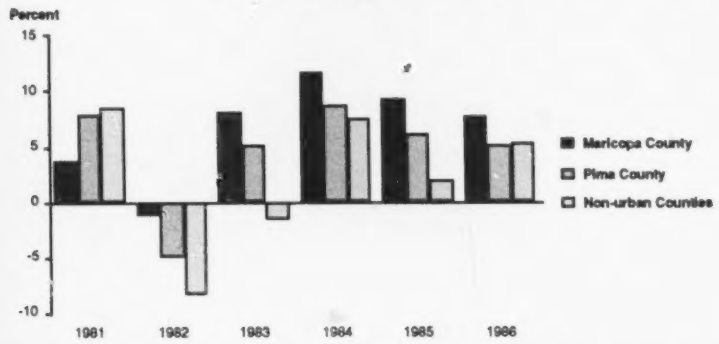
Four Arizona counties – Cochise, Gila, Graham, Greenlee – grew more slowly economically than the national average of roughly 3 percent per year, each due in large part to reductions in copper mining. Three more counties' growth barely exceeded 3 percent (Apache, Pinal, Santa Cruz).

In contrast, during the 1970s every county gross product but Cochise's grew at least 4 percent per year, though adjusted growth was weak in Pinal County and negative in Greenlee County. Economic growth in the Phoenix area was exceeded by three rural counties, even on an adjusted basis. The Tucson area's GCP growth ranked seventh.

During the 1980s, growth rates dropped sharply in every rural county except Cochise, whose gross product already was growing very slowly. In contrast, the Phoenix area's growth held steady. Because of mining problems, total growth in Pima and Pinal counties was slower than in the 1970s, despite faster growth in the adjusted measure.

Maricopa County's economic growth during 1980-86 far surpassed that of any other county; Pima County's rate was second. Among the non-urban counties, only Mohave and Yavapai experienced an economy expanding much faster than the national average. The mining-dependent counties of Gila, Graham and Greenlee suffered a declining economy.

FIGURE I
ANNUAL ECONOMIC GROWTH
Percent Change in Real GCP



Source: Center for Business Research, College of Business, Arizona State University

The last national recession ended in 1982, coincident with a major drop in the mining industry. In the first four years of the ensuing expansion, Maricopa County's GCP increased 42 percent. The average of the non-urban counties was only 14 percent, as lingering problems in mining and agriculture plagued most of them (see Figure I).

COUNTY HIGHLIGHTS

Apache County

Accounting for less than 1 percent of the state's gross product, the economy of Apache County depends heavily on government, which provided 34 percent of GCP in 1986. Growth slowed from about 4 percent per year in the 1970s to 2 percent annually in the 1980s. Its strongest period was from 1976-78, when a major power plant was under construction. Fast growth turned into a four-year recession from 1979-82; the economy declined again in 1985. The importance of agriculture slipped as its gross product declined, replaced by a fast-growing TCPU (transportation, communications and public utilities) industry from 1979-85.

Cochise County

The only years in which Cochise's economy expanded much more than 3 percent were in 1971 and 1978. Its growth during the 1970s was the slowest of all counties; it ranked higher in the 1980s only because of declines in other mining counties. Its GCP rose by a modest or small amount each year between 1983 and 1986. After providing a 21 percent share of Cochise's gross product in 1970, mining's portion had declined to 1 percent by 1986. TCPU, services and government all grew in importance. Government provided 44 percent of the 1986 gross product, with Fort Huachuca standing out as the reason for the particularly high share.

Coconino County

Very strong growth between 1971 and 1973 has not been repeated. Annual growth of 6 percent in the 1970s was cut in half in the 1980s. In the early 1970s, Coconino benefitted from the short-lived national phenomenon of moving from cities to smaller towns and rural areas; no single industry was responsible for its boom. Government makes up nearly one-third of the gross product; services, a growing sector, and trade, whose share is declining, also are important, particularly because of the area's tourism. Growth was moderately strong throughout the 1983-86 expansion.

Gila County

Though this county's share of GSP is less than 1 percent, its mining accounts for nearly 10 percent of the state's total. Mining's share of GCP dropped from 53 percent in 1970 to 31 percent in 1986. Manufacturing replaced mining's declining share in the 1970s, but its GCP fell between the late 1970s and 1986. After 5 percent annual growth in the 1970s, the economy declined at a 1 percent annual rate during 1980-86, with slow or negative growth spread through all industries. The mining boom of 1981 was completely wiped out in 1982-83. Further declines occurred in 1985-86.

Graham County

The problems of the mining and agriculture industries severely affected the economy of this county, with combined sectoral shares falling from 33 to 8 percent between 1970 and 1986. Every other industry but government experienced very slow growth, increasing government's share of GCP from 18 to 34 percent. But government is the third worst performing industry in the state, after mining and agriculture. GCP declined throughout the 1980s, even during the 1983-86 expansion. It accounted for only 0.3 percent of the state total in 1986.

Greenlee County

Greenlee's numbers are the most bizarre of any county. Essentially, it is dependent on one industry – mining – and just one company. In contrast to other mining counties where numerous copper mines closed, Greenlee's mines stayed open and production remained high, though employment plunged. The result was decimation of almost every industry but mining, whose share of GCP *increased* to 80 percent despite copper's problems. The adjusted GCP of this county has declined each year since 1974, except for slight growth in 1979-80.

Maricopa County

The Phoenix area's share of GSP ranged from 82 percent in FIRE to 16 percent in mining. Except for manufacturing, every industry's growth between 1970 and 1986 was faster than the state's average. The economy is diversified, with shares of both FIRE and services slowly climbing. The Phoenix area economy enjoyed double-digit growth in each expansion: 1972-73, 1977-78, 1984. Annual average growth was near 6.5 percent per year through the 1970s and 1980s. Growth during the 1983-86 expansion was at least 7.7 percent each year.

Mohave County

Mohave still ranks fourth, although growth rates between the 1970s and

1980s were cut from 7 to 3.5 percent – from faster than the Phoenix area to well below. Growth was especially strong between 1977 and 1979. Fast growth in manufacturing and TCPU increased their sectoral shares, at the expense of construction and mining. The result is a diversified economy, unlike that of most rural counties, with trade, services, manufacturing, FIRE, government and TCPU all having shares of between 11 and 20 percent in 1986.

Navajo County

Growth slowed between the 1970s and 1980s more dramatically in this county than in any but the three copper mining counties of Gila, Graham and Greenlee. Mining's share of GCP rose from 4 percent to 18 percent following very strong growth in 1971-78 and between 1980 and 1982. TCPU had an unusually large 1986 sectoral share at 22 percent. Except during 1984, growth was quite slow between 1979 and 1986.

Pima County

Economic growth was fastest between 1971 and 1973. After the mid-1970s, the Tucson area economy expanded far slower than that of the Phoenix area. In no year did GCP grow at double-digit rates. Between 1983 and 1986, GCP growth was just fourth fastest. Only during 1984 did growth much exceed the average of the 1970s. Through 1986, manufacturing and services gained in importance, replacing mining. Five industries – manufacturing, trade, FIRE, services and government – were roughly equal in size in 1986.

Pinal County

During the 1970s, mining and agriculture led Pinal's economy, growing more rapidly than the other sectors. The reverse was true between 1980 and 1986. Adjusted GCP growth swung from second slowest in the 1970s to second fastest in the 1980s, with exceptionally strong growth between 1984 and 1986. The big turnaround can be traced to large declines in the mining industry – its sectoral share dropped from 48 to 28 percent – and strong gains in construction and manufacturing. The latter, and government, particularly increased sectoral shares.

Santa Cruz County

The Santa Cruz economy, which contributed only 0.5 percent of the state's 1986 gross product, is unique in Arizona because it is heavily dependent on trade, particularly with Mexico. This sector's share, however, declined between 1970 and 1986, replaced by manufacturing, particularly the twin plants concept in which a firm locates a facility on both sides of the border. Government is the other large industry. The county's growth was especially strong in the early 1970s, but the annual average of the 1970s was less than the non-urban total, a condition reversed in the 1980s, though annual average growth still was mediocre at 2.7 percent.

Yavapai County

Yavapai's growth also was most rapid during the early 1970s, but its growth throughout the 1970s and 1980s was one of the fastest in the state. The county's economy is relatively diverse and stable, though mining's share has fallen a bit. Trade, services and government provide the largest portions of GCP. Except for a large decline in mining in 1984, Yavapai County's economy grew strongly during the 1983-86 expansion.

Yuma/LaPaz Counties

The economy of these counties is strongly influenced by agriculture and government, which together contributed nearly one-half of its 1986 GCP. Total growth exceeded adjusted growth in both the 1970s and 1980s; the total exceeded the non-urban average while adjusted GCP lagged behind. As in most rural counties, the growth rate during the 1980s was noticeably slower than during the 1970s, though 1986 in particular was a good year.

COMPARISON OF GCP TO OTHER MEASURES

Gross County Product captures elements of the economy not included in other measures. For example, employment statistics may show much different growth patterns.

The Center for Business Research created a simple county coincident index using only employment and unemployment rate. Annual growth rates from this measure were much different from those of GCP in all but the urban counties and Cochise County. Adding other indicators – retail sales and building permits in the case of the coincident indexes reported monthly – slightly reduces the error rate. For a comparison of GCP to the coincident economic indexes, see page 9.

– **Tom R. Rex**
Research Manager

Methodology

Calculations of Gross County Product are dependent on personal income estimates of earnings by industry, provided by the U.S. Department of Commerce, Bureau of Economic Analysis. By county, such data are available only annually and not until approximately 17 months after the end of the year. A further weakness in the series is that earnings by industry are not disclosed if the industry consists of few employers. The Center for Business Research estimated earnings in those situations.

Gross County Product estimates were calculated by a means identical to that used for Gross State Product; the sum of the county gross products equals GSP. Thus, GCP has the same shortcomings as GSP, which largely relate to indirect measurement. They may become more pronounced in a small area in which one or a few industries dominate. In particular, if the composition of one of the nine major industries is much different from the state average, the deflators used may be inappropriately weighted. This appears to be the case in Navajo County's mining industry, which largely mines coal rather than copper.

Gross products can be calculated by more than one method. In a coming issue of *Arizona Business*, results from two methods will be presented, by comparing the Center for Business Research's GSP figures to a new series just released by the U.S. Bureau of Economic Analysis. Extension of the findings to GCP will be made.

Coincident Indexes Decline Again in May

The economies of metropolitan Tucson and non-urban Arizona declined for the second consecutive month in May, while the Phoenix area economy expanded at a meager rate.

The coincident index for the Phoenix area rose 0.3 percent to a record 148.4 (1982=100). The index for the Tucson area fell 0.6 percent to 137.0 while the decline in rural Arizona was 0.2 percent, putting its index at 129.5.

Despite a rise in the unemployment rate, the economy in Maricopa County in May expanded because of gains in each of the other components. The advances in retail sales and employment were not large enough, however, to offset April's declines, and employment was no higher in May than in February. Commercial building permit valuations rose again; only one month since March 1986 was higher.

In Pima County, only the value of building permits rose in May, though its level still was very low historically. Employment fell to a level equal to that of last October.

Rural Arizona's building permit value also climbed, to its highest point since July 1986. Retail sales also increased, though not back to March's level. The unemployment rate, however, jumped back over 10 percent and employment fell to a level below that of last November.

Annual growth rates dropped sharply in May in Pima County and rural Arizona (see Figure I). Maricopa and Pima's rates were below their long-term averages, but non-urban Arizona's rate was slightly above its mediocre average.

Definite weakening in Arizona's economy occurred during the second quarter. Preliminary data suggest that the economies of both of the urban counties declined in June, though non-urban Arizona appears to have posted an economic gain.

Because of the gain in the Phoenix area economy in May, the composite statewide measure eked out a 0.1 percent advance to 143.2.

FIGURE I
COINCIDENT ECONOMIC INDEXES
Year-to-Year Percent Changes

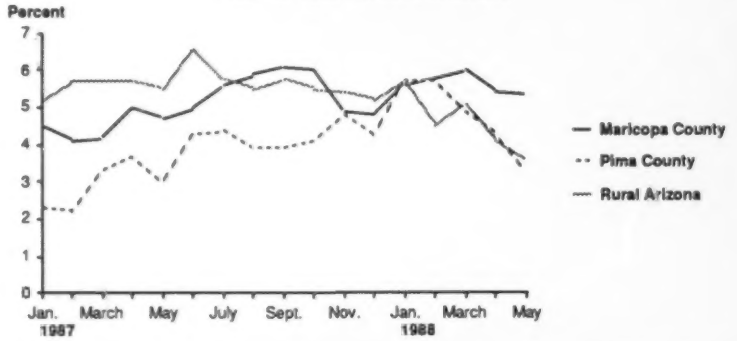
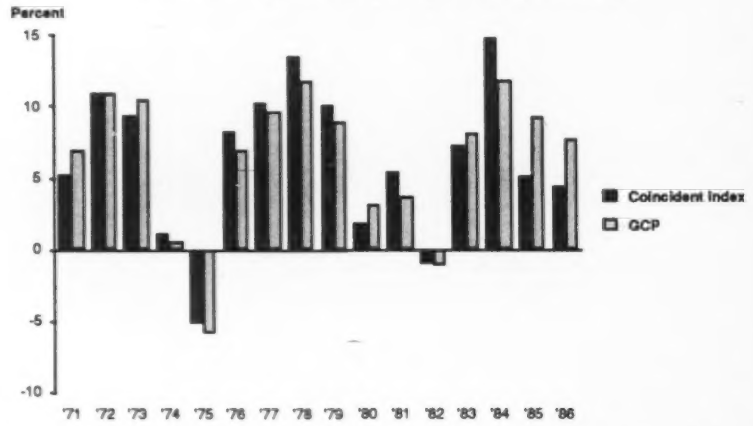


FIGURE II
COMPARISON OF COINCIDENT INDEX TO GROSS COUNTY PRODUCT
Annual Average Percent Change, Maricopa County



Source (Figures I and II): Center for Business Research, College of Business, Arizona State University

REVISION

In constructing a coincident or leading economic index, it is desirable to trend-adjust the series so that its annual average growth is equal to a rate that enhances interpretation of the index. Until the Gross County Product series were calculated, each of the coincident indexes were trend-adjusted by the same factor, used in the Arizona Trendline (coincident index) to match the 5.7 percent annual average rate of growth of Gross State Product. The figures reported in this article are the first in which each of the three indexes are trend-adjusted to their own average GCP growth rate.

The impact of this revision is minimal, with annual average growth in the coincident indexes rising 0.5 percent for Maricopa County, declining 0.2 percent for Pima County and falling 0.3 percent for non-metropolitan Arizona. Between 1974, when the coincident indexes begin, and 1986, when the GCP series end, annual average growth was 6.1 percent in the Phoenix area, 4.4 percent in the Tucson area, and 2.9 percent in rural Arizona.

COMPARISON TO GCP

The revised coincident indexes generally track GCP in annual growth rates, though the annual average difference is between 1.5 and 2 percentage points for each of the three areas. The comparison for Maricopa County is shown in Figure II. The largest differences occurred in 1984 through 1986, though the direction of change always matched (e.g., if the growth rate of the coincident index slowed, so did that of GCP).

– Tom R. Rex
Research Manager

Services and Trade Are Arizona's Largest Industries

TABLE 1
ARIZONA SECTORAL SHARES

	1987 Personal Income	1986 Total Employment	1987 Gross State Product
Services	23%	27%	17%
Trade	16	21	17
Government	18	16	13
Manufacturing	16	11	15
FIRE*	8	10	18
Construction	8	8	6
TCPU**	6	4	8
Agriculture	3	3	3
Mining	2	1	3

*Finance, Insurance and Real Estate
**Transportation, Communications and Public Utilities

Source: Center for Business Research, College of Business, Arizona State University and U.S. Department of Commerce, Bureau of Economic Analysis

TABLE 2
AVERAGE RANK ORDER OF NINE MAJOR INDUSTRIES

	Arizona	Maricopa County	Pima County	Non-urban Arizona
Services	1	1	1	3
Trade	2	2	4	2
Government	3	5	2	1
Manufacturing	4	3	3	4
FIRE*	5	4	6	9
Construction	6	6	5	6
TCPU**	7	7	7	5
Agriculture	8	8	9	8
Mining	9	9	8	7

*Finance, Insurance and Real Estate
**Transportation, Communications and Public Utilities

Source: Center for Business Research, College of Business, Arizona State University and U.S. Department of Commerce, Bureau of Economic Analysis

TABLE 3
ARIZONA'S TEN LARGEST INDUSTRIAL SUBSECTORS
Ranked by 1986 Employment

	Subsector	Industrial Division	Employment	Share
1.	State and Local Government	Government	184,483	10.9%
2.	Business Services	Services	104,859	6.2
3.	Eating and Drinking Places	Trade	98,754	5.8
4.	Health Services	Services	91,114	5.4
5.	Real Estate	FIRE*	90,259	5.3
6.	Special Trade Contractors	Construction	87,997	5.2
7.	Wholesale Trade	Trade	66,933	4.0
8.	Miscellaneous Retail**	Trade	49,456	2.9
9.	Food Stores	Trade	43,274	2.6
10.	Federal Government, Civilian	Government	41,718	2.5

*Finance, Insurance and Real Estate
**Includes retail establishments such as drug stores, liquor stores and used merchandise stores.

Source: Center for Business Research, College of Business, Arizona State University; from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Services remained Arizona's largest industry in 1987, followed by trade, government and manufacturing. However, between 1982, when the last recession ended, and 1987, construction and FIRE (finance, insurance and real estate) were the state's fastest growing industries, followed by services, trade and manufacturing.

The size rankings varied across Arizona's three major geographical divisions – metropolitan Phoenix, metropolitan Tucson, and the non-urban counties. Government, for example, is the largest industry in rural Arizona, but is only fifth largest in Maricopa County. In terms of growth, FIRE was only the fourth fastest growing industry in rural Arizona; services was the second fastest in the Phoenix area.

1987 INDUSTRIAL STRUCTURE

The sectoral shares of Arizona's nine major industrial divisions, defined by the Standard Industrial Classification (SIC), are provided in Table 1 for each of the three most important economic measures: employment, the earnings by industry portion of personal income (PI) and Gross State Product (GSP). (The latest year for which data are available varies from 1986 to 1987, depending on the source and geographic coverage).

Sectoral shares for an industry vary across measures because of factors such as level of wages, degree of labor intensivity, and profits. The broadest gauge, GSP, shows lower shares for government and services, but a higher share for FIRE, than the other measures. The yardsticks generally agree, however, that agriculture and mining are by far the smallest of Arizona's major industrial divisions.

Since the Phoenix area accounts for roughly two-thirds of Arizona's economic activity, its ranking of industries in Table 2 is similar to that of the entire state. In contrast, the ranking in non-urban Arizona is much different, with higher ranks for government, TCPU (transportation, communications and public utilities),

and mining, and lower ranks for FIRE and services.

Tables 3 and 4 present Arizona's largest industrial subsectors, derived by dividing the SIC's nine major industrial divisions into more than 70 subsectors. Ranked by employment, four of the trade industry's subsectors place in the top 10. The two largest services subsectors, business and health, rank second and fourth. State and local government leads the lists, ranked both by employment and personal income. Because of the high pay in the manufacturing industry, two of its subsectors are among the top 10 ranked by personal income, but are not on the employment list.

Expanding the lists to the top 25 categories, trade and services dominate with 13 entries on the employment ranking and 10 on the PI ranking. Government, manufacturing, FIRE and construction each placed two or three subsectors on each list.

Compared to the top 10 rankings based on the previous year's data (1985), the ranking by personal income was little changed, but on the employment list, special trade contractors dropped two notches and food stores gained two places.

INDUSTRIAL GROWTH SINCE 1982

The rate of economic growth varied widely by industry during the 1982-87 expansion. The FIRE industry led with an average growth rate across the three measures shown in Table 5 of more than 50 percent. Growth was fairly tightly bunched among the next four industries – construction, manufacturing, trade and services – but government grew quite slowly while the mining industry declined.

While growth rankings varied geographically across the state (see Table 6), construction, FIRE and services were among the leaders in each area. Government and mining ranked near the bottom in each case.

The fastest growing subsectors over the 1982-86 period are shown in Tables 7 and 8. Ranking high on both lists were business services; real estate; special trade contractors; auto repair, services and ga-

TABLE 4
ARIZONA'S TEN LARGEST INDUSTRIAL SUBSECTORS
Ranked by 1986 Personal Income

	Subsector	Industrial Division	Personal Income*	Share
1.	State and Local Government	Government	$3,908	12.1%
2.	Health Services	Services	2,200	6.8
3.	Special Trade Contractors	Construction	1,890	5.9
4.	Wholesale Trade	Trade	1,624	5.0
5.	Business Services	Services	1,576	4.9
6.	Electric and Electronic Equipment	Manufacturing	1,235	3.8
7.	Federal Government, Civilian	Government	1,062	3.3
8.	Transportation Equipment, excluding Motor Vehicles	Manufacturing	1,021	3.2
9.	Banking	FIRE**	971	3.0
10.	Eating and Drinking Places	Trade	803	2.5

*In millions of dollars
**Finance, Insurance and Real Estate

Source: Center for Business Research, College of Business, Arizona State University; from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 5
ARIZONA GROWTH RATES, 1982-87

	Personal Income*	Wage & Salary Employment	Gross State Product*
Services	45%	53%	48%
Trade	43	32	50
Government	14	18	1
Manufacturing	50	20	65
FIRE**	68	48	4
Construction	43	60	42
TCPU***	31	24	46
Agriculture	51	NA	19
Mining	–16	–37	–29

*Inflation adjusted
**Finance, Insurance and Real Estate
***Transportation, Communications and Public Utilities

Source: Center for Business Research, College of Business, Arizona State University; U.S. Department of Commerce, Bureau of Economic Analysis; Arizona Department of Economic Security

TABLE 6
AVERAGE RANK ORDER OF 1982-87 GROWTH*

	Arizona	Maricopa County	Pima County	Non-urban Arizona
Services	3	2	4	3
Trade	4	4	6	5
Government	7	8	7	7
Manufacturing	5	5	5	2
FIRE**	2	3	2	4
Construction	1	1	1	1
TCPU***	6	6	8	6
Agriculture	8	9	3	8
Mining	9	7	9	9

*Based on 1982-87 employment, 1982-86 personal income and 1982-86 gross product
**Finance, Insurance and Real Estate
***Transportation, Communications and Public Utilities

Source: Center for Business Research, College of Business, Arizona State University

rages; security and commodity brokers and services; and general building contractors. Among these industries, the only ones to rate high on the size measures are business services, real estate and special trade contractors. The two latter industries, however, are highly cyclical – their growth rankings were much lower based on the 1980-85 period reported in the July 1987 issue of *Arizona Business*. Overall, the growth rankings are much different for 1982-86 than published last year.

While four manufacturing subsectors were among the ten fastest growing on the employment measure, none made the top 10 on the personal income measure. FIRE placed four, including the top three, on the PI listing, two of which were on the employment listing as well.

Services placed five subsectors among the top 15 on both lists. Manufacturing and FIRE accounted for most of the rest of the leading growth industries.

TABLE 7
ARIZONA'S TEN FASTEST GROWING INDUSTRIAL SUBSECTORS*
Ranked by 1982-86 Percent Change in Employment

	Subsector	Industrial Division	Percent Change
1.	Special Trade Contractors	Construction	89%
2.	Furniture and Fixtures	Manufacturing	85
3.	Business Services	Services	79
4.	Auto Repair, Services and Garages	Services	73
5.	Lumber and Wood Products	Manufacturing	72
6.	General Building Contractors	Construction	70
7.	Real Estate	FIRE**	66
8.	Security and Commodity Brokers and Services	FIRE**	60
9.	Stone, Clay and Glass Products	Manufacturing	53
10.	Transportation Equipment, excluding Motor Vehicles	Manufacturing	53

*With at least 4,000 employees in 1986
**Finance, Insurance and Real Estate

Source: Center for Business Research, College of Business, Arizona State University; based on data from the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 8
ARIZONA'S TEN FASTEST GROWING INDUSTRIAL SUBSECTORS*
Ranked by 1982-86 Percent Change in Personal Income

	Subsector	Industrial Division	Percent Change
1.	Real Estate	FIRE**	241%
2.	Holding and Other Investment Companies	FIRE**	159
3.	Security and Commodity Brokers and Services	FIRE**	154
4.	Special Trade Contractors	Construction	109
5.	Business Services	Services	107
6.	Miscellaneous Services	Services	98
7.	General Building Contractors	Construction	97
8.	Auto Repair, Services and Garages	Services	97
9.	Legal Services	Services	92
10.	Banking	FIRE**	90

*With personal income of at least $100 million in 1986
**Finance, Insurance and Real Estate

Source: Center for Business Research, College of Business, Arizona State University; based on data from the U.S. Department of Commerce, Bureau of Economic Analysis.

ECONOMIC BASE ANALYSIS

In addition to direct measures of an industry's size, such as employment or gross product, other factors should be considered. Economic base theory assumes that certain industries are "basic" in that their growth leads and determines the region's overall development. Basic industries bring in money from outside the region by producing goods and services for export. In contrast, non-basic activities result from the region's overall growth, serving only the local population. Most of the major industries have both basic and non-basic elements.

The simplest means of identifying basic activities is by using a location quotient: the ratio of an industry's share of the regional economy to that industry's share of the national economy. While directly measuring the concentration of an industry relative to the national average, if the ratio is greater than one, a portion of the industry's output can be assumed to be basic (exported out of the region). While location quotients are crude measures, alternatives are prohibitively expensive.

Except in the agriculture and mining industries, location quotients from the three measures (employment, PI, gross product) do not vary much. They need to be carefully interpreted, however. For example, while metal mining, which provides most of Arizona's mining economic activity, is almost entirely a basic industry, other types of mining, such as oil and gas extraction, are nearly non-existent in the state. The entire mining industry, therefore, has little net exports with a location quotient of 1.06.

According to the location quotients shown in Table 9, construction is Arizona's most basic industry. Construction is "exported" in that houses and other buildings are frequently sold to parties living outside the state or to new residents.

FIRE has the second highest location quotient, though the basic component strictly is limited to the Phoenix area. Its "exports" largely result from real estate activity, again due to in-migration to the state.

Government has a location quotient greater than one, in part because of several large military bases and federal programs pertaining to national forests, national parks and Indian reservations. However, as described in the box on page 13, Arizona's state and local government sector, hardly an exporting industry, is relatively large.

Services and trade also have small basic components. Most of the "exports" of services relate to tourism and seasonal residents. Some of trade's exports also are sold to these groups; others are purchased by the state's new residents, who frequently need items such as autos and home furnishings.

The manufacturing industry is not a net exporter. In particular, the location quotient for non-durable goods is very low, with no subsector a net exporter. The durable goods portion of the industry, however, has a location quotient near one. Several of its subsidiary industries, particularly those involved with high-technology products, have basic components.

Exporting industries vary across Arizona. In Maricopa County, government and mining do not have location quotients exceeding one. Industries relying on net in-migration for their export component generally have a higher location quotient in the Phoenix area because of its more rapid population growth.

In non-urban Arizona, mining, agriculture and government all have large export segments, but construction's location quotient is lower because of the area's slower growth. TCPU is a basic industry because of the large power plants scattered across the state that serve the metropolitan areas.

– Tom R. Rex
Research Manager

Complete Report Available

This article is a summary of the report "The Economy of Arizona and its Counties: Industrial Composition and Growth," which includes all information (most of which is updated) provided in the 1986 report "Arizona's Industrial Structure" and the 1987 supplement. The new report includes approximately 30 tables as well as narrative. A copy may be obtained for $5 from the Center for Business Research, College of Business, Arizona State University, Tempe AZ 85287-4406; (602) 965-3961.

TABLE 9
1986 LOCATION QUOTIENTS, AVERAGE OF PERSONAL INCOME, EMPLOYMENT AND GROSS PRODUCT

	Arizona	Maricopa County	Pima County	Non-urban Arizona
Services	1.01	1.05	1.11	.80
Trade	1.01	1.08	.92	.90
Government	1.06	.82	1.31	1.84
Manufacturing	.76	.83	.77	.45
FIRE*	1.14	1.28	.82	.42
Construction	1.55	1.60	1.59	1.24
TCPU**	.85	.89	.76	1.08
Agriculture	.95	.71	.55	3.07
Mining	1.06	.21	1.23	4.95

*Finance, Insurance and Real Estate
**Transportation, Communications and Public Utilities

Source: Center for Business Research, College of Business, Arizona State University, based on data from the U.S. Department of Commerce, Bureau of Economic Analysis

Arizona's Dependence on Government

Government accounts for a greater share of economic activity in Arizona than in the nation. This is particularly true in rural Arizona, where the location quotient exceeds 1.8. Government, however, has been a slow growing industry for many years. For example, between 1982 and 1987, only the mining and agriculture industries grew more slowly statewide.

More than 25 percent of the non-urban economy is tied to government with 40 percent accounted for by mining, agriculture and government. Each figure is more than twice the state's average. Thus, it is no surprise that the rural economy did so poorly in the 1980s.

The government sector is divided into three parts: federal civilian, military, and state and local. Every Arizona county except Greenlee and Maricopa have a location quotient greater than one in state and local government, with the highest ratios (greater than two) in Graham, Coconino, Pinal and Apache Counties. Ironically, even though Phoenix is the state capital, Maricopa County's ratio is only 0.9 (see Table below).

Federal civilian employment and economic contribution also is relatively high in most counties; only Pinal, Mohave, Greenlee and Maricopa have location quotients less than one. The ratio exceeds two in Cochise, Apache, Coconino, Yuma and Santa Cruz counties. Military has a strong presence only in Cochise, Yuma and Pima counties.

The heavy reliance on government, mining and agriculture likely equates to continued weak economic growth in many rural counties.

GOVERNMENT LOCATION QUOTIENTS
Based on 1986 Personal Income

	Arizona	Maricopa County	Pima County	Non-urban Arizona
Federal civilian	1.0	0.6	1.1	2.4
Military	1.1	0.7	1.4	2.8
State and Local	1.1	0.9	1.4	1.6

Source: Center for Business Research, College of Business, Arizona State University, based on data from the U.S. Department of Commerce, Bureau of Economic Analysis

GSP Growth Remains Moderate in First Quarter

The Arizona Gross State Product (GSP) expanded a near-average 1.5 percent during first quarter 1988, though growth in the year ending in the first quarter was a subpar 4.5 percent. The adjusted measure, which excludes the mining and agriculture industries and better tracks the economic cycle, grew less rapidly in the first quarter, but its growth between first quarter 1987 and first quarter 1988 equalled the 5.7 percent annual average (see Table 1).

GSP again was revised, due to changes in data produced by the federal government, particularly fourth quarter 1987 personal income and 1984-87 national income. These revisions reduced the seasonality problem apparent in the federal statistics (see the June 1987 and December 1987 issues of *Arizona Business*). Therefore, the Center for Business Research no longer is seasonally adjusting GSP a second time.

The result of the revisions was lower growth during 1987 than previously reported: only 3.7 percent for total GSP and 3.9 percent for adjusted GSP. After more than doubling the national growth rate between 1983 and 1986, GSP growth barely outpaced Gross National Product (GNP) during 1987 and remained nearly equal through first quarter 1988.

Problems in the construction industry largely were responsible for the slowing of growth in 1987 (from 6.9 to 3.7 percent), though the gross products of manufacturing, trade, government and FIRE (finance, insurance and real estate) also expanded less rapidly. The construction industry remained in a recession in first quarter 1988 while FIRE's growth rate remained low.

– Tom R. Rex
Research Manager

TABLE 1
REAL ECONOMIC GROWTH

	Quarterly Percent Change			Annual Percent Change		
		Adjusted			*Adjusted*	
	GSP	*GSP*	*GNP*	*GSP*	*GSP*	*GNP*
1st Quarter 1987	0.9	–0.4	1.1	2.5	3.3	1.5
2nd Quarter 1987	1.6	1.6	1.2	4.0	3.8	3.0
3rd Quarter 1987	1.0	1.2	1.1	4.7	4.3	3.9
4th Quarter 1987	0.3	1.8	1.5	3.8	4.4	5.0
1st Quarter 1988	1.5	0.9	0.8	4.5	5.7	4.8

Notes: Annual percent change compares gross product in a given quarter to that of the same quarter of the prior year. All data were revised.

Source: Gross State Product (GSP) and adjusted GSP (minus the contributions of the agriculture and mining industries) from Center for Business Research, College of Business, Arizona State University. Gross National Product (GNP) from U.S. Department of Commerce, Bureau of Economic Analysis.

July Purchasing Indicators Strong Despite Price Hikes

The Arizona economy continued to perform well in July, with all seven economic indicators again in the positive column. Lead time on vendor shipments, new orders received, production and employment all showed good strength. The only really negative note was that prices continued to go up at an uncomfortably high rate, as has been the case each month this year.

The Arizona economy likely will extend its marathon run into 1989, which will be year seven of the economic expansion. All the numbers look favorable, with consumer spending and capital investment fueling the economic growth. The expected gains in the second half may not match those of the first half of 1988, but they will be strong enough to maintain modest pressure on both prices and interest rates. However, interest rates will not rise fast enough to halt economic growth, and so the expansion will keep rolling along.

TABLE 1
JULY PURCHASING SURVEY

	Percent of Purchasing Managers Indicating Each Response (July compared to June)		
Key Indicators	*Higher*	*Same*	*Lower*
Prices paid for major commodities	50	48	2
Delivery time from vendors	36	60	4
Purchased materials inventory level	31	43	26
New orders received	43	32	25
Production	40	41	19
Employment	26	60	14
Purchases	40	32	28

Source: Purchasing Management Association of Arizona, Purchasing Management Association of Southern Arizona, and the Northern Arizona Group.

The price increases in each of the seven months so far in 1988 have been larger than in any month during the past five years (1982-1986), as a combination of growth in demand and a bumping up against capacity limits puts pressure on industrial prices. Inventory is well under control and poses no threat to further economic growth.

– Harold Fearon

Dr. Fearon is the National Association of Purchasing Management Professor in the ASU College of Business.

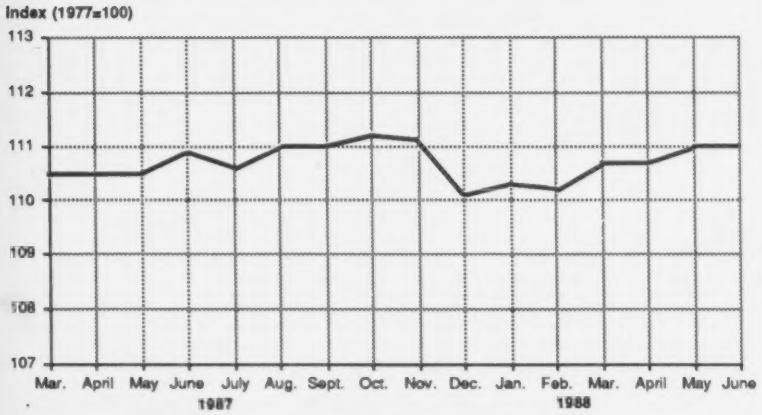
Arizona Leading Index Steady in June

The Arizona Index of Leading Economic Indicators held steady in June at 111.0 (see Figure I). The index is above the 110.9 June 1987 figure (1977=100), and very near the peak value of 111.2 achieved in October just before the stock market crash.

The index is based on 10 economic indicators, combined and weighted to project the pace of economic activity several months ahead. Five of the components come from a monthly survey of Arizona purchasing managers conducted by Dr. Harold Fearon. The Arizona Index of Leading Economic Indicators is sponsored by Citibank (Arizona).

Providing the biggest boost to the index was a drop in seasonally adjusted unemployment insurance claims. The money supply, sensitive prices, new orders, production and residential building permits were also positive influences. Delivery times, inventories, employment and average hours worked had a negative impact.

FIGURE I
ARIZONA INDEX OF LEADING ECONOMIC INDICATORS



Source: Economic Outlook Center, College of Business, Arizona State University; sponsored by Citibank (Arizona).

TABLE 1
NET CONTRIBUTION OF INDIVIDUAL COMPONENTS TO THE ARIZONA INDEX OF LEADING ECONOMIC INDICATORS

	Net Contribution*			
	Mar.	*Apr.*	*May*	*June*
Delivery Time**	–.09	–.03	.08	–.13
Inventory Levels**	–.02	–.06	–.08	–.06
New Orders**	.01	.04	–.07	.01
Production**	.06	.00	.04	.03
Employment**	.01	.00	.04	–.05
Residential Building Permits	.31	–.35	.38	.03
Unemployment Insurance Claims	.05	.21	–.23	.19
Average Workweek, Manufacturing	.07	–.02	.05	–.05
Money Supply	.11	.15	.02	.06
Change in Sensitive Materials Prices	.00	.02	.03	.03
OVERALL INDEX CHANGE (%)	.50	–.04	.26	.06

*The net contribution of each component is calculated by multiplying the monthly percent change in its index by its relative importance.

**Based on indicators from the purchasing management associations of Arizona and southern Arizona.

Source: Economic Outlook Center, College of Business, Arizona State University; sponsored by Citibank (Arizona).

COMPONENTS

Of the ten components of the Arizona Index of Leading Economic Indicators, eight are based on Arizona data and two are national indicators that also appear in the national Composite Index of Twelve Leading Indicators. These two national components are the money supply and a moving average of the change in sensitive materials prices.

Those interested in learning more about the characteristics of the national index are referred to the *Handbook of Cyclical Indicators* produced by the U.S. Department of Commerce, Bureau of Economic Analysis. The following discussion of sensitive materials prices draws heavily on that source.

The sensitive materials prices index is a combination of two price series: "Index of Spot Market Prices, Raw Industrial Materials" and "Producer Price Index, 28 Sensitive Crude and Intermediate Materials". Materials tracked by these series include: hides, rubber, rosin, tallow, tin, lead scrap, zinc, steel scrap, copper scrap, waste paper; and sand, gravel, and crushed stone.

Changes in the demand for these basic commodities are a good indication that in the months to come there will be a corresponding change in manufacturing output. In particular, increases in sensitive materials prices are associated with increases in the index of leading indicators. Large changes can also signal an overheating environment and emerging bottlenecks which could cause the Federal Reserve to sharply contract the economy.

OUTLOOK

An examination of the recent performance of the change in sensitive materials prices shows the economy still has the room it needs for continued expansion, although the demand for basic commodities is still strong. The lack of movement in the overall index suggest that the Arizona economy will continue on a steady course of very slow expansion over the next several months.

– **Tracy L. Clark,** *Economist*
Economic Outlook Center

ARIZONA ECONOMIC INDICATORS

	Month or Quarter	Value	Percent Change from Previous Period	Percent Change from Year Ago	Year-to-Date Value	Year-to-Date Percent Change from Year Ago
GROSS STATE PRODUCT						
(In Billions of Dollars, at Annual Rate)						
Arizona - Current Dollars	1st Qtr.	59.443	2.0	9.0	NA	NA
Arizona - 1982 Dollars	1st Qtr.	49.003	1.5	4.5	NA	NA
COINCIDENT ECONOMIC INDEXES						
(1982 = 100)						
Arizona	May	143.2	0.1	4.7	NA	NA
Metropolitan Phoenix	May	148.4	0.3	5.3	NA	NA
Metropolitan Tucson	May	137.0	-0.6	3.3	NA	NA
Non-urban Arizona	May	129.5	-0.2	3.8	NA	NA
CONSUMER PRICE INDEX (1982-84 = 100)						
Metropolitan Phoenix	2nd Qtr.	119.9	2.1	3.8	NA	NA
INDEX OF LEADING ECONOMIC						
INDICATORS (1977 = 100)						
Arizona	June	111.0	0.0	0.1	NA	NA
BUILDING PERMITS						
(Total Dollar Value in Thousands)						
Maricopa County	June	316,319	-15	0	1,755,115	-11
Pima County	June	52,741	31	12	273,673	-12
Balance of State	June	69,180	13	-26	324,983	-4
Arizona	June	438,240	-5	-4	2,353,771	-10
TOTAL HOUSING UNITS AUTHORIZED						
Maricopa County	June	2,690	33	32	12,182	-15
Pima County	June	637	95	48	3,307	-9
Balance of State	June	924	18	-39	4,751	-16
Arizona	June	4,251	36	7	20,240	-14
HOME SALES						
Maricopa County - Number	June	4,375	-19	-32	24,550	-17
Maricopa County - Median Price	June	80,650	2.0	0.0	79,725	0.9
HOUSING AFFORDABILITY INDEXES						
Metropolitan Phoenix - New Homes	2nd Qtr.	96	5.5	1.1	NA	NA
Metropolitan Phoenix - Resale Homes	2nd Qtr.	124	0.8	6.9	NA	NA
MORTGAGE INTEREST RATES						
(Conventional, 30-year, Fixed-rate)						
Maricopa County	July	10.4	0.0	3.0	NA	NA
POPULATION ESTIMATES						
(In Thousands)						
Maricopa County	2nd Qtr.	2,013	0.3	2.2	NA	NA
Arizona	2nd Qtr.	3,476	0.3	2.1	NA	NA
ELECTRICAL POWER SALES						
(In Millions of Kilowatt Hours)						
Arizona	June	4,202	17.9	11.1	20,085	8.7

NA = Not Applicable

Source: Center for Business Research, College of Business, Arizona State University

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